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ABSTRACT

This manual provides program objectives for instructors teaching graphic arts courses in junior and senior high Department of Defense Dependents Schools. The manual contains the program's general objective (students will demonstrate an understanding of the basic concepts and principles of graphic communications), and 15 program objectives. Each program objective is correlated with several suggested instructional objectives and with each grade level of the graphic arts curriculum. Following the objectives, suggested facilities layouts for a graphic communications laboratory, with drawings, are provided. Appended to the document is a list of approved textbooks and instructional materials for the graphic arts curriculum, along with publishers' and authors' names, sources of materials, and names of the textbook review committees. (KC)

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DS Manual 2860.1
November 15, 1980

ED209449

# Graphic Arts Objectives

career education

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## Foreword

Graphic Arts in the Department of Defense Dependents Schools (DoDDS) provides exploratory experiences in the junior high schools and specific training in the high schools in areas such as artwork, image assembly, photo conversion, image carrier preparation, image transfer, and finishing procedures.

Graphic Arts experiences are provided in the industrial arts laboratory, business laboratory, language arts, and art programs. There are several schools in DoDDS which provide extensive offerings in Graphic Arts.

This manual has been prepared as a guide for the Graphic Arts Program.

Anthony Cardinale

Anthony Cardinale
Director

## Acknowledgments

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# Program Description

DoDDS Graphic Arts touches almost every facet of modern life. Beyond the obvious activities of the printing, journalism, and photography fields, every school, business, and governmental office is deeply engaged in the communication processes.

Job possibilities are greatly enhanced for any young person who is familiar with modern methods of message preparation and/or duplication.

Not every DoDDS school will undertake the full graphics program outlined in this manual.

In some schools, many of the graphic arts objectives outlined in this manual will be emphasized in a specialized graphic arts facility, which has complete equipment for photography, printing, design, and detailing.

In most schools, only selective instruction in the areas of office reproduction, photography, cinematography, design, and drafting will be emphasized in business, industrial arts, art, or the language arts program.

In junior high school, graphic arts students enrolled in a specialized DoDDS graphic arts facility will be involved in exploratory experiences with basic printing and photography processes and in exploratory experiences with career selection and prevocational guidance.

In high school, students enrolled in a specialized DoDDS graphic arts facility will be involved in accomplishing several of the objectives, depending on the time in the program. Accomplishment of these objectives will assist the student in reinforcing basic skills and in acquiring vocational, prevocational and entry level job skills in the graphic communication field.

# Numbering Code Used with Objectives

The numbering code indicates the level of the objective.

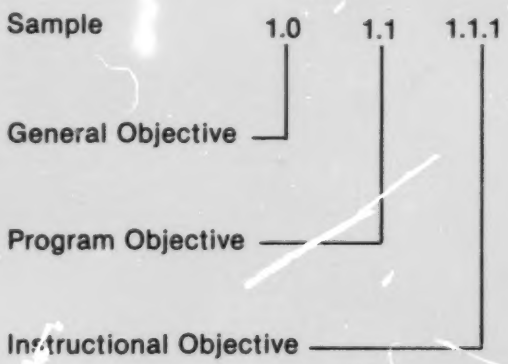
The first digit of the number of each statement refers to the general objective.

The second digit refers to the program objective.

The third digit identifies the instructional objective.

Instructional objectives are not to be considered inclusive, but only presented as examples.

The X next to the instructional objective indicates the course in which the objective should be taught.




The number code is used to facilitate

- identification of objectives
- correlation of objectives with textbook and instructional materials
- matching of test items to objectives

All Program and Instructional objectives should be preceded by the phrase, "The learner should. . ."

## General Objective: 1.0 Demonstrate an understanding of the basic concepts and principles of graphic communications.

| Program Objective | Instructional Objective (Illustrative) | Exploratory | 9-12 |
|---|---|---|---|
| 1.1 Apply basic concepts of communications through graphics. | 1.1.1 Explain the role of each component within the communications cycle including communicator, producer, and user. | X | X |
| | 1.1.2 Explain how artwork, image assembly, photo conversion, image carrier preparation, and image transfer techniques are combined to produce a communications message. | X | X |
| 1.2 Apply the basic principles of artwork. | 1.2.1 Explain the salient features of design principles, including proportion, balance, contrast, rhythm, and harmony. | X | X |
| | 1.2.2 Prepare several thumbnail sketches of a design concept. | X | X |
| | 1.2.3 Prepare a rough layout of a design concept. | X | X |
| | 1.2.4 Prepare a comprehensive layout of a design concept. | X | X |
| 1.3 Apply the basic concepts of image assembly. | 1.3.1 Describe the basic methods of image assembly. | X | X |
| | 1.3.2 List the functions of computers in graphic communications. | X | X |
| | 1.3.3 Paste up camera-ready copy from assembly language. | X | X |
| | 1.3.4 Prepare a direct-image master for reproducing a minimum of 100 copies with acceptable ink density. | X | X |
| 1.4 Apply the concepts of photo-conversion. | 1.4.1 Identify various camera types and their uses. | X | X |
| | 1.4.2 Explain image formation in the camera. | X | X |
| | 1.4.3 List the controls that adjust the exposure of photo-conversion film. | X | X |
| | 1.4.4 List the way photo-masks are made by photo-conversion. | X | X |
| | 1.4.5 Demonstrate proper film processing steps. | X | X |

| Program Objective | Instructional Objective (Illustrative) | Exploratory | 9-12 |
|---|---|---|---|
| 1.5 Apply the concepts of image carrier preparation. | 1.5.1 Identify the procedures of image carrier preparation, including operations of layout, stripping, and image carrier exposing and processing. | X | X |
| | 1.5.2 Describe conventional procedures with the new automated plate processing systems. | | X |
| 1.6 Summarize the basic concepts of image transfer. | 1.6.1 Describe the 5 basic systems of offset lithography image transfer equipment. | X | X |
| | 1.6.2 Describe various offset inks, papers, and supplies | | X |
| | 1.6.3 Operate an offset lithogra system. | | X |
| 1.7 Apply the basic concepts and principles of lithography. | 1.7.1 Demonstrate the procedures for layout and stripping of a flat | | X |
| | 1.7.2 Describe the functions of the flat and of the masking paper, proper use of stripping tools and materials, and the purpose of basic reference and stripping lines. | | X |
| | 1.7.3 Identify physical characteristics of plates, specifically, deep-etch, multimetal, and shallow-relief plates. | | X |
| | 1.7.4 Demonstrate proper exposing and processing techniques for Litho Plate. | | X |
| | 1.7.5 Describe proper techniques for additions and corrections and for gumming plates | | X |
| | 1.7.6 Describe differences between additive and subtractive processes. | | X |
| | 1.7.7 Demonstrate the use of Gray Scale. | | X |
| | 1.7.8 Demonstrate installation, press run, gumming, and removal of a plate including the location and function of major systems on the press. | | X |

| Program Objective | Instructional Objective (Illustrative) | Exploratory | 9-12 |
|---|---|---|---|
| 1.7 (Continued) Apply the basic concepts and principles of lithography. | 1.7.9 Demonstrate procedures performed prior to the beginning of a press run, stressing the relationship of each procedure to smooth press operation, plate life, and the quality of the printed sheet. | | X |
| | 1.7.10 List possible trouble spots and adjustments to be made during press run. | | X |
| 1.8 Apply the basic concepts of color separation. | 1.8.1 Demonstrate the procedures necessary to produce a good halftone negative from continuous-tone copy. | | X |
| | 1.8.2 Describe the characteristic curve which relates density to exposure. | | X |
| | 1.8.3 Identify densities on a densitometer and perform density readings. | | X |
| | 1.8.4 Identify three primary and subtractive colors. | | X |
| | 1.8.5 Print three separation negatives without color correction masks. | | X |
| | 1.8.6 Proof the separation negatives to produce the full range of colors. | | X |
| | 1.8.7 Prepare proofs. | | X |
| | 1.8.8 Produce a four-color reproduction, using the silver-masking, indirect-color separation techniques. | | X |
| 1.9 Apply the basic concepts and principles of finishing. | 1.9.1 Demonstrate paper-cutting techniques. | | X |
| | 1.9.2 Identify salient features of finishing equipment. | | X |
| | 1.9.3 Demonstrate common paper folds. | | X |
| | 1.9.4 Identify the various methods of paper fastening. | | X |
| 1.10 Apply the basic concepts of line photography. | 1.10.1 Describe the process by which the "copy" becomes the "line negative" and how this process fits into the graphic arts field. | | X |
| | 1.10.2 Describe the structure and light-sensitive characteristics of film. | | X |
| | 1.10.3 Prepare tray solutions. | | X |

| Program Objective | Instructional Objective (Illustrative) | Exploratory | 9-12 |
|---|---|---|---|
| 1.10 (Continued) Apply the basic concepts of line photography. | 1.10.4 Set up the processing room with the trays properly positioned. | | X |
| | 1.10.5 Discriminate among the various characteristics of negatives. | | X |
| | 1.10.6 Demonstrate the use of the process camera. | | X |
| | 1.10.7 Produce a properly exposed final negative and print. | | X |
| 1.11 Synthesize the concepts of halftone photography. | 1.11.1 Produce a proper halftone negative. | | X |
| | 1.11.2 Select the appropriate halftone negative from a selection. | | X |
| | 1.11.3 Produce a proper halftone print. | | X |
| 1.12 Synthesize the concepts of still photography. | 1.12.1 Identify the techniques of still-life composition. | | X |
| | 1.12.2 List the characteristics and functions of appropriate still photography equipment. | | X |
| | 1.12.3 Judge negative quality in preparation for printing photos. | | X |
| | 1.12.4 Photograph still life. | | X |
| | 1.12.5 Process film to make proper negatives. | | X |
| | 1.12.6 Process negative to make print. | | X |
| | 1.12.7 Produce prints from acceptable negatives using various control techniques. | | X |
| | 1.12.8 Prepare prints for final display. | | X |
| 1.13 Synthesize the basic concepts of screen printing. | 1.13.1 Identify screen printing techniques, including paper stencil, Tushe, and film. | | X |
| | 1.13.2 Produce a screen print on different surfaces, including paper, textile, wood, metal, glass, and plastic. | | X |
| | 1.13.3 Demonstrate the removal of the blocking out medium from the screen using the appropriate solvent. | | X |

| Program Objective | Instructional Objective (Illustrative) | Exploratory | 9-12 |
|---|---|---|---|
| 1.14 Synthesize the concepts of fluid duplication. | 1.14.1 Identify the characteristics and functions of fluid duplicating equipment. | | X |
| | 1.14.2 Prepare a proper ditto master using latent image and multi-color processes. | | X |
| | 1.14.3 Produce final copies from the master. | | X |
| 1.15 Synthesize the concepts of image transfer. | 1.15.1 Identify the characteristics and functions of image transfer equipment. | | X |
| | 1.15.2 Prepare a chase for printing. | | X |
| | 1.15.3 Produce final copies. | | X |

## Suggested Facilities Layouts

The facilities descriptions and layout sketches following are intended only as guides. Any number of alternative facility plans could work equally well. For some schools, facilities for this program may already exist. In such cases, the following material may offer the instructor and administration some suggestions for making the facility more effective through minor alterations.

For other schools starting up a new program, it may be necessary to remodel existing facilities. In such cases, it should not be expected that the remodeled facilities will offer every advantage that can be achieved with new facilities.

Even if new facilities are to be provided, a school may be unable to support a complete laboratory either because of enrollment, space, staff, or financial limitations. In such cases, decisions must be made regarding minimum program essentials and then facilities designed to fit.

Whether new or remodeled, facilities may serve multiple or joint functions. Thus, business and graphics production areas may be combined, art and graphics study areas could be shared, welding can be done in an auto shop, small engine and automotive shops can be combined, computer and business programs may share spaces, the various health and cosmetology programs can share a common suite, and the electronics laboratory could be combined with a physical science laboratory.

Such combinations have served elsewhere to strengthen both programs. Students see the direct relationship of what they are doing with careers in another field, and faculty finds professional stimulation and mutual support in working with colleagues in what have often been artificially separated disciplines.

## Graphic Communications Laboratory

The graphic communications laboratory has spaces and equipment for a variety of types of functions involved in graphics and communication arts. The functions shown include every major unit in the field; however, it may be desirable to offer only limited programs in a given school. Thus, a whole functional unit could be deleted and the overall space and equipment needs correspondingly reduced. For example, the movable type unit in printing could be dropped completely or, if a minimal program were desired, everything except fluid duplicating could be deleted in order to simplify the general program as well as the laboratory.

The zones are described below.

*Briefing and planning zone.* This area is intended to serve as a small lecture area where the class can assemble at the beginning of the class period, be briefed on the operations that they will be doing, instructed as to what the program for the day is to be, to view films, and engage in similar activities. If space is a problem, it can double as a photography studio area.

*Letterpress and cold type zone.* This unit would normally be found only in a major graphics shop, such as the one at the Darmstadt ROC. A small demonstration unit for card printing may be all that is desired at any location. This area includes the composition cabinets which are located adjacent to the briefing and planning zones so that composition and planning can also go on at the student tables. Other equipment includes proof press, the platen press, letter press, portable drying racks, pilot presses, composing table, and lead and slug storage. This space works in conjunction with the paper handling and storage zone that follows.

*Paper handling and storage zone.* This area includes secure storage and a room which can be locked to serve as an issue room with access only by the instructor. Adjustable shelving should be included in order that bulk paper stock can be stored. Space is provided for a paper cutter, paper drill, and supporting work table. It also incudes a folding machine and a work counter for paper handling.

For space reasons, two study carrels are also included in this zone, although they could be included in most any other zone as well. Their purpose is to provide a viewing area for single loop instructional films.

*Process camera and offset zone.* This space includes a variety of functions which team together to provide for the offset process. It includes the process camera and its related darkroom. The camera unit projects into an open space that has light control through a movable drape in order to provide for consistent lighting during the photographing process. The other end of the camera is included in the darkroom where films can be processed as well.

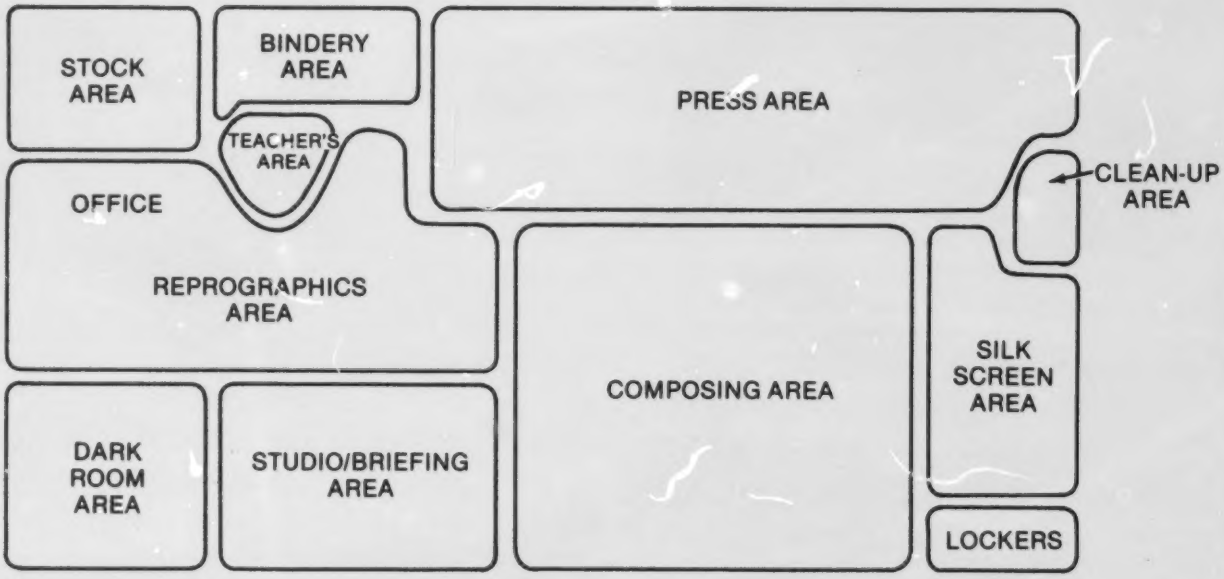
A U-shaped composing room is also included which would provide for varitype headliner, typewritten materials, composer and reference materials for type faces, sizing, and similar activities. This area can be secured; however, it might be desirable to fix the equipment to the counters for security reasons. A large light table is provided for general composition which can be used by as few as two students or as many as eight, depending on the size of their respective projects. Two individual light tables are also provided. Since they take more space, one large light table is highly recommended. A general work table is provided which includes the waxer, rubber stamp machine, trim saw, end mitre and press, and general work space. This multipurpose table should have a wood surface and be rugged in composition. Two offset presses are shown. Space should be provided around them for working space; however, one press could be provided if funds or space is a problem.

*Book binding zone.* This area is quite simple in nature and includes a book binding unit, a stitcher, and a work counter for general operations. In the event this area is eliminated, the stitcher should remain and be placed in the paper handling and storage zone.

*Hot type zone.* Similar to the letterpress and cold type zone, this unit would normally be found only in a large shop, such as the one at the Darmstadt ROC. Much of this function has now been replaced by photo-process operations. This space includes a simple typecaster with type cabinets, and it composes a self-contained unit.

*Silkscreen zone.* This area is simple in nature. If space is a problem, it may be eliminated as an option. It is comprised mainly of a work counter and a large sink with storage below.

## Suggested Graphic Communication Laboratory Functional Zones*

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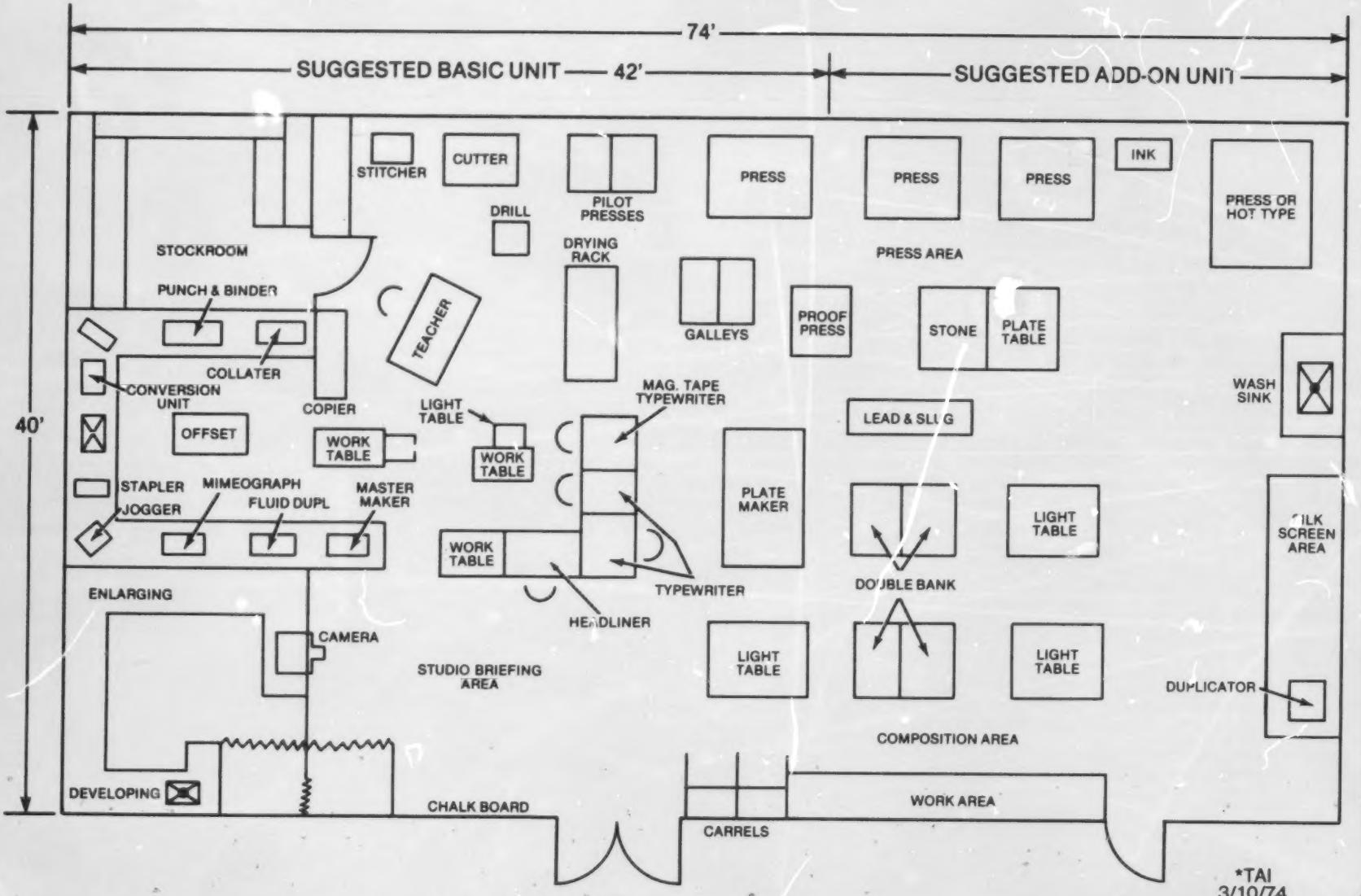
## Suggested Graphics Communication Laboratory*

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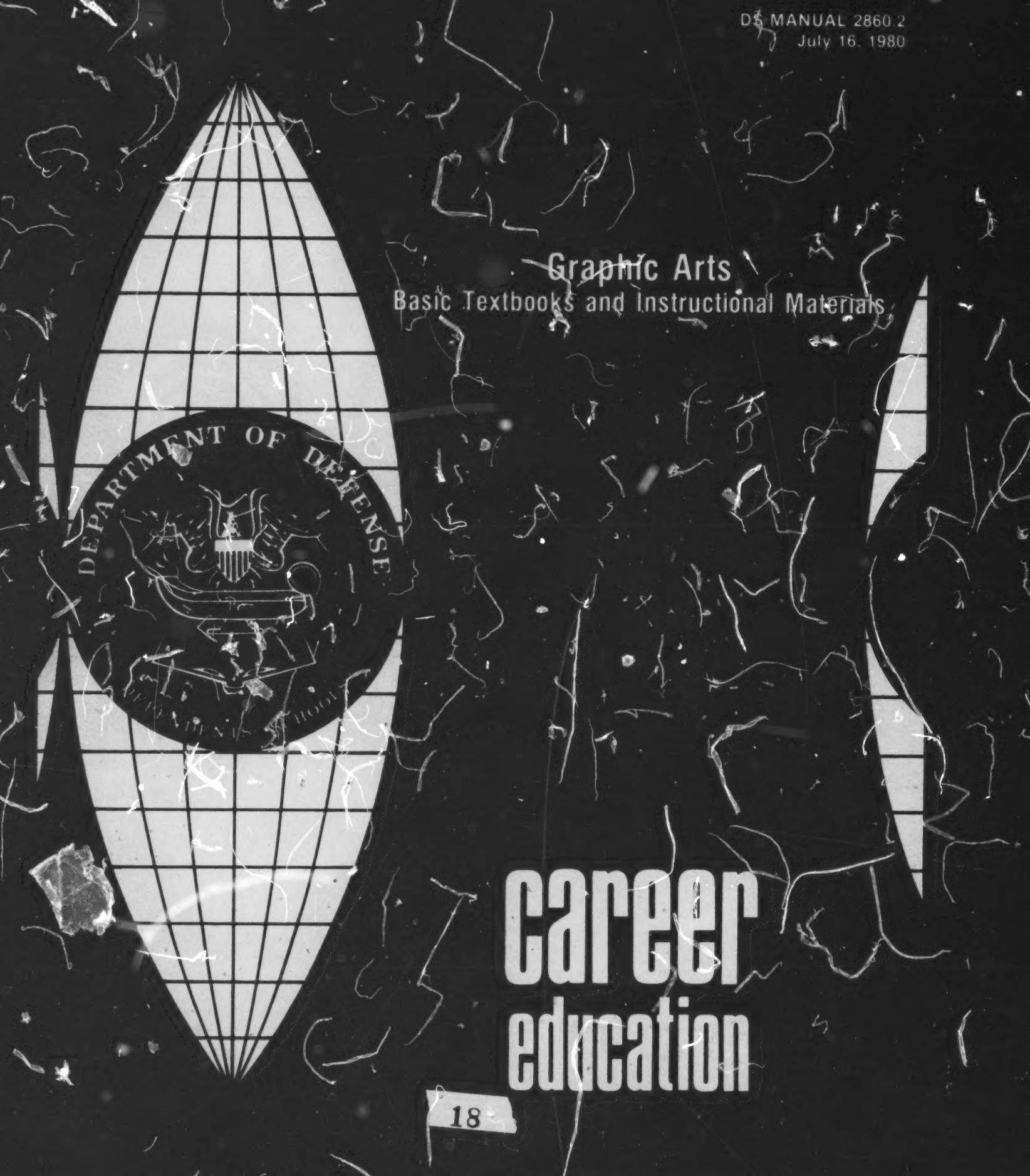


# Graphic Arts

## Basic Textbooks and Instructional Materials

career education

18

DEPARTMENT OF DEFENSE
OFFICE OF DEPENDENTS SCHOOLS
2461 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22331

EDS-50867

November 15, 1980

MEMORANDUM FOR Regional Directors of Dependents Schools

SUBJECT: Basic Textbooks and Instructional Materials for Graphic Arts

It is a pleasure to provide you with the attached Department of Defense Dependents Schools (DoDDS) List of Approved Textbooks and Instructional Materials for Graphic Arts. Any future appropriated fund procurement of Graphic Arts Basic Textbooks and Instructional Materials for DoDDS must conform to this listing until officially revised.

As you know, texts and materials provided by publishers for this review process were studied extensively during school year 1979-80 by formal review committees in the DoDDS regions. Those worldwide committees were composed of students, parents, and community representatives as well as professional educators. Detailed data conforming to established criteria and generated by each of these committees, were reviewed in detail by the Career Education task group in their meeting of June 23-27, 1980. Basic textbooks and instructional materials judged most suitable for achieving the published DoDDS objectives within the DoDDS system have been included in the approval list.

Your support of the DoDDS Graphic Arts basic textbooks and instructional materials review is appreciated.

Anthony Cardinale
Director

## Approved List of DoDDS Basic Textbooks and Instructional Materials for GRAPHIC ARTS - Grades 7-12

| TITLE | AUTHOR | PUBLISHER | COPYRIGHT DATE |
|---|---|---|---|
| Comprehensive Graphic Arts<br>Student's Manual<br>Teacher's Manual | Dennis and Jenkins | Bobbs-Merril Co., Inc. | 1979,<br>1st ed. |
| Graphic Arts<br>(Appropriate for industrial art module) | Darvey E. Carlsen | Charles A. Bennett Co., Inc. | 1977 |
| Photo Offset Lithography | Z.A. Prust | Goodheart-Wilcox Co., Inc. | 1977 |
| Photo Offset Fundamentals, ThirdEdition<br>Study Guide<br>Instructor Answer Key<br>Filmstrips and Cassettes | John E. Cogoli | McKnight Publishing Co. | 1980 |
| PACKAGED PROGRAMS | | | |
| Graphic Communications Education Program | PICA | PICA Foundation, Inc. | 1974 |

Fifty-eight self-instructional programs (SIP's) in a sound-slide format: 22 programs of an orientation type, 36 performance-based programs (including LAP's) for specific printing processes, to assure "hands-on" learning experiences; curriculum guide; program scripts.

## Publisher Addresses of Approved Basic Textbooks and Instructional Materials for Graphic Arts

Bobbs-Merrill
4300 W. 62nd Street
P. O. Box 7080
Indianapolis, Indiana 60264

Charles A Bennett Company, Inc.
809 W. Detweiller Drive
Peoria, Illinois 61615

Goodheart-Wilcox Company, Inc.
123 West Taft Drive
South Holland, Illinois 60473

McKnight Publishing Company
P.O. Box 2854
Bloomington, Illinois 61701

PICA Foundation, Inc.
P.O. Box 4487
Charlotte, North Carolina 28204

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